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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/736,147	12/15/2000	Yasuo Kobayashi	200669US0DIV	9061

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EXAMINER

DANG, THI D

ART UNIT	PAPER NUMBER
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1763

12

DATE MAILED: 12/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/736,147

Applicant(s)

KOBAYASHI ET AL.

Examiner

Thi Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 32-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 32-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 32-36 are rejected under 35 U.S.C. 102(b) as being anticipated by *Kawamura* (5,328,558).

Kawamura discloses an apparatus for etching SiO₂ that has all of the claimed structures: a plasma generating section (48); a treatment vessel (10) connected to the plasma generator; a susceptor (12) in the treatment vessel for holding the substrate; a cooling device (16, 18) for cooling the substrate; a gas supplying section (30) for adding a gas downstream of the plasma generating section. Even though, *Kawamura* discloses that Argon is supplied by the gas supplying section (30), the gas supplying section (30) is capable of delivering a reactive gas as well as a nonreactive gas. The type of gas to be used would depend on the treatment desired. Structurally, the claimed "supply section" does not define over the gas supplying section (30) of *Kawamura*.

With regard to claims 34-36, it should be noted that the cooling device of *Kawamura* is capable of cooling the substrate below 0°C (col. 4, lines 35-36). Thus, the cooling device of *Kawamura* is capable of the same function as the claimed cooling device.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 42- 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kawamura*.

With regard to claims 42 and 43, *Kawamura* does not disclose gas exhaust holes as claimed. However, *Kawamura* does disclose gas exhaust hole (60). It would have been an obvious matter of design choice to provide gas exhaust holes in the downstream gas supplying means (30) as an alternative arrangement.

In view of Figure 1, it would have been obvious for the gas supplying section (30) of *Kawamura* to be at least 20 cm away from the end of the plasma generation section as a matter of optimizing for the best result.

4. Claims 45-47 rejected under 35 U.S.C. 103(a) as being unpatentable over of *Kawamura* in view of *Kikuchi* et al (5,919,336).

Kawamura discloses introducing NF_3 and H_2 to the plasma generator and Ar downstream of the plasma. It is obvious that the gas supplying means (30) of *Kawamura*'s device is capable of introducing different processing gases. *Kikuchi* teaches that it is known in the art to introduce NF_3 downstream of the plasma in the method of removing an oxide from a surface. Therefore, it would have been obvious to connect the gas supplying means (30) of *Kawamura* for introducing NF_3 downstream of the plasma instead of upstream because *Kikuchi* teaches that this arrangement is also effective for removing oxide films. With regard to claim 47, it is obvious that the upstream gas supplying means of *Kawamura*'s device is capable of introducing N_2 because the gas supplying means is not structurally limited by the type of gas being used for processing. One skill in the art would be able to connect any conventional processing gas to the gas supplying means of *Kawamura*'s device, including N_2 , which is a conventional processing gas.

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5. Claims 37-41, and 48-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kawamura* in view of *Lee* (5,616,208).

Kawamura does not disclose a heating device as claimed. *Lee* teaches that it is known in the art to provide means for heating and cooling the substrate during vapor etching/cleaning. Cooling is provided by the cooling means inside the susceptor and the heating is provided by heating lamps located above the substrate (col. 13, lines 5-45). It would have been obvious to modify *Kawamura*'s etching device so that heating lamps are provided above the susceptor (12) because this is conventional in the art to perform heating and cooling in the same etching chamber. *Lee* also teaches to provide lifting pins for lifting the substrate during heating (col. 13, lines 45-50). It would have been obvious to incorporate lifting pins in *Kawamura*'s susceptor because it is conventional in the art to lift the substrate during heating.

Lee also teaches that it is well known in the art to use a cluster tool apparatus having a plurality of treatment chambers for different treatments including cleaning, etching and wire-film formation (col. 2, lines 28-65; col. 14, lines 33-34). It would have been obvious to incorporate *Kawamura*'s etching device into a cluster system that includes a metal-film forming chamber as disclosed by *Lee* because this arrangement would enable one in the art to perform a plurality of processes efficiently and continuously.

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6. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read 'Thi Dang', with a stylized, cursive script.

Thi Dang
Primary Examiner
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